The Fire Support Coordination Line: Should It Delineate Area Responsibilities Between Air and Ground Commanders?

A Monograph
by
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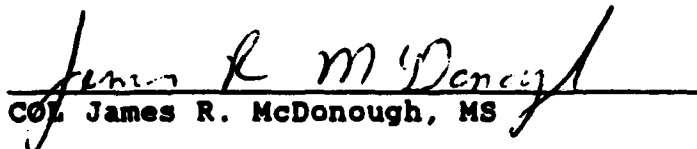
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ABSTRACT

THE FIRE SUPPORT COORDINATION LINE: SHOULD IT DELINEATE AREA RESPONSIBILITIES BETWEEN AIR AND GROUND COMMANDERS? by MAJ Lester C. Jauron, FA, 56 pages.

This monograph examines if the Fire Support Coordination Line (FSCL) should delineate area responsibilities to air and ground commanders. During Operation Desert Storm the Joint Force Commander (JFC) made the Joint Force Air Component Commander (JFACC) responsible for the area beyond the FSCL. This facilitated the execution of the theater interdiction effort but forced ground commanders to coordinate with the JFACC before engaging targets beyond the FSCL. This use of the FSCL differed from joint and army doctrine, and North Atlantic Treaty Organization (NATO) and Combined Forces Command (CFC) practice.

This monograph begins by describing the evolution of the FSCL, giving its current definition, and examining how it was used during Operation Desert Storm and is used by NATO and the CFC. The monograph then uses John Warden's key force concept and Martin Van Creveld's theory about command to develop critieria for analyzing alternative answers to the research question. After analyzing alternatives, the monograph recommends a system and describes its implications for joint commanders.

The monograph recommends a more flexible system for delineating area responsibilities to air and ground commanders. This system allows the JFC to balance the needs of both the JFACC and the ground commanders for unity of effort based on the situation. It uses boundaries, allows the JFC and ground commanders to establish permissive areas for the JFACC, makes the JFC and ground commanders responsible for establishing the target priorities in these permissive areas, and refines the Air Force's force application missions to make them more responsive to ground commanders if this is required. This flexible system allows the JFC to delineate area responsibilities in a variety of ways and strengthens the link between ground and air by forcing them to train together in many different situations.

Table of Contents

SECTION 1. INTRODUCTION

Joint and Army doctrines define the Fire Support Coordination Line (FSCL) as a permissive fire support coordinating measure which allows any supporting agency to attack targets beyond it without coordinating with the ground commander. The emphasis in both definitions is on facilitating the engagement of targets while safeguarding friendly ground forces.[1]

However, during Operation Desert Storm the FSCL delineated the areas of responsibility between the operational and tactical commanders. The operational commander, through his Joint Force Air Component Commander (JFACC), controlled the area beyond the FSCL while the tactical commanders were responsible for the area short of the FSCL.[2] Both air and ground commanders had assets that could range beyond the FSCL.[3]

Since the JFACC had responsibility beyond the FSCL, ground commanders were forced to coordinate with the JFACC before engaging targets beyond the FSCL. This coordination sometimes took hours and caused tremendous frustration for ground commanders who, based on the doctrinal definition of the FSCL, thought they would be able to engage targets beyond the FSCL without coordination.[4]

The non-doctrinal use of the FSCL during Operation Desert Storm caused considerable controversy. However, this controversy masks a more important issue. As the armed forces become smaller and weapon systems become more expensive, the U.S. must get the most out of every system. This raises the following question: does using the FSCL to delineate area responsibilities to air and ground commanders

1

facilitate the Joint Force Commander (JFC) using both air and ground forces in the most effective manner? This monograph attempts to answer this important question.

The monograph is divided into six sections. Section One defines the problem, poses the research question, and describes the structure of the monograph. Section Two describes how the FSCL evolved, gives its current definition, and shows how changes in technology and doctrine may have in'alidated this definition by allowing both ground and air commanders to engage targets beyond the FSCL. It then describes how air-ground area responsibilities were delineated during Operation Desert Storm and are delineated in the North Atlantic Treaty Organization (NATO) and in the Combined Forces Command (CFC) in Korea. Section Three uses Colonel John Warden's ideas about joint operations and Martin Van Creveld's theory about command to derive criteria for analyzing alternative answers to the research question. Section Four provides three alternative ways to delineate area responsibilities to air and ground commanders while Section Five analyzes these alternatives using the theory-based criteria developed in Section Three. Section Six answers the research question and provides implications for joint commanders, component commanders, and joint/service doctrine.

This monograph recommends a more flexible system to delineate responsibilities to ground and air commanders. This system allows the JFC to balance the needs of both the JFACC and the ground commanders for unity of effort based on the situation. It makes maximum use of boundaries, allows the JFC to establish permissive areas for the JFACC within

2

the boundaries of the subordinate ground units, allows
subordinate ground commanders to establish permissive areas
within their boundaries for the JFACC, allows the subordinate
ground commanders to set targeting priorities in the
permissive areas they establish, and refines the Air Force's
force application missions to provide responsive support to
ground commanders throughout their areas of operation. This
system gives the JFC the flexibility to delineate area
responsibilities in a variety of ways and strengthens the
link between ground and air by forcing them to work together
in many different situations.

SECTION 2. BACKGROUND
Evolution of the FSCL

The need to coordinate air delivered fires with ground
maneuver forces has existed since World War I. However, it
was only during the last two years of that war that aircraft
provided close support to ground troops. Even then air's
primary roles remained air superiority, reconnaissance, and
artillery adjustment.[5]

During World War I coordination between air and ground
was extremely limited for a number of reasons. These
included the multiple roles assigned to the air squadrons,
the inability of the pilots to communicate with the troops
they supported, and the clearly defined nature of the World
War I battlefield.[6] Normally aircraft massed at decisive
points and pilots used their own judgement when acquiring
targets. Since the most lucrative and vulnerable targets -
artillery batteries, logistical sites, command posts, and

3

reserve formations - were located behind the enemy trenches fratricide was not considered a problem.[7]

During the interwar years the U.S. Army Air Corps was more interested in gaining institutional independence than in developing procedures to provide close support to ground forces. Airmen saw air superiority and strategic bombing as the best missions for an independent air force.[8] They believed close support was a wasteful use of air assets and a threat to the institutional independence of the air force.[9] As late as mid-1943 the capstone manual of the U.S. Army Air Corps declared:

> In the zones of contact, missions against
> hostile forces are most difficult to control,
> are most expensive, and are, in general,
> least effective....Only at critical times are
> contact zone [battlefield] missions
> profitable.[10]

The U.S. entered World War II with no doctrine for coordinating ground and air fires. Since close support threatened its independence, the Air Corps had not developed the capabilities to effectively perform this mission. As a result, aviators believed close support missions were impossible and doctrine for performing them unnecessary.[11] Ground force doctrine did not provide the necessary procedures either. Although the 1940 version of FM 6-20 Field Artillery Tactics and Techniques, made the division artillery officer responsible for ensuring cooperation between Air Corps units operating in the division area it offered no guidance on how to obtain this cooperation.[12]

During World War II battlefield necessity drove the development of techniques for air-ground cooperation. The logical division of effort that had air only attacking

targets beyond the range of ground artillery overlooked three aspects of ground combat; the psychological impact of close air attack, the necessity of massing all combat power to rapidly overcome the inherent advantages of the defender, and the need to achieve this mass rapidly in order to sustain mobile operations and deny the defender time to organize.[13]

Doctrine did not provide techniques for air-ground cooperation until World War II was almost over. In the interim the effectiveness of air-ground cooperation depended on the personalities of commanders and the initiative of subordinates. As a result, cooperation was almost non-existent at first but became better as the war went on.[14] A statement made by General Omar Bradley one month after Normandy typified the problem and the way it was solved.

> I cannot say too much for the very close cooperation we have had between the Air and Ground. In spite of the fact that we had no time for training together in England, it did not take long to work out a system of cooperation.[15]

In spite of the benefits of close air-ground cooperation the lack of doctrinal techniques led to several tragedies. These included the short bombings during Operation Cobra which killed 111 American soldiers and the anti-aircraft fire against the transports carrying the 504th Parachute Infantry Regiment in Sicily which destroyed 23 aircraft and damaged 37 others.[16]

The 1948 version of Field Manual 6-20 captured the air-ground coordination lessons learned in World War II. It introduced several coordination measures to safeguard friendly troops while providing maximum freedom of action to

ground and air commanders. These coordinating measures included the no-fire line and the bomb line.[17]

The no-fire line was established by the ground commander to safeguard friendly units while facilitating the attack of targets beyond the line with artillery. All artillery could fire beyond the no-fire line without coordination. Fires short of the no-fire line were approved by the ground commander through his supporting artillery.[18]

The bomb line was the direct precurser to the FSCL. It was established by the ground commander to facilitate aerial engagement of targets while protecting friendly troops. Aircraft could engage targets beyond the bomb line without coordinating with ground forces. It was established along recognizable terrain as close to the forward elements as possible depending on the situation and the training/ experience of the pilots.[19]

The FSCL was introduced in the 1961 version of FM 6-20-1, Field Artillery Tactics. It was defined as:

> ...a no-fire line between corps and higher echelons and a bomb line for ground and air forces. A FSCL may be established by the corps commander to ensure coordination of those fires delivered by forces not under control of the corps which may effect current tactical operations. When possible the FSCL should ʋe easy to define on the map and easy to recognize from the air.[20]

Unlike the bomb line the FSCL was a multifunctional coordinating measure. As a no-fire line it forced higher echelons to coordinate with corps before firing artillery short of the line. As a bomb line it safeguarded friendly soldiers from the effects of air-delivered weapons. The

intent seemed to be to give the corps commander a larger area in which he controlled all aspects of the fight.

The FSCL was an outgrowth of the Pentomic experience. In 1961 the Army was preparing to fight with dispersed units on a non-linear nuclear battlefield. These units were designed to be flexible and mobile. Doctrine emphasized decentralized operations to rapidly concentrate, strike, and disperse to defeat the enemy without becoming a lucrative nuclear target.[21] The FSCL established unity of effort for the corps commander short of the line and facilitated decentralized non-linear operations.

The 1965 FM 6-20-1 slightly changed the definition of the FSCL. According to this manual the FSCL was established by the appropriate ground commander rather than the corps commander. Additionally, the ground commander would normally coordinate the establishment of the FSCL with the tactical air commander and other supporting elements.[22]

In 1967 a change to FM 6-20-1 aligned the U.S. Army definition of the FSCL with that used in NATO. According to this definition the FSCL:

> ...is a line which takes the place of the bomb line. It is used in relation to air, ground, or sea delivered conventional or nuclear weapons. It should be established by the appropriate land (normally the corps) commander in consultation with the Tactical Air Commander or his delegate. It is used to coordinate supporting fire by forces not under the control of the appropriate land force commander which may affect tactical operations.
> The FSCL should be as close to the forward elements as possible consistent with troop safety and the tactical situation. Furthermore it should be easy to define on a map and easy to identify from the air...[23]

7

This new definition was a partial reversion to the post-World War II bomb line. The emphasis was once again on safeguarding friendly troops rather than giving the ground commander room for conducting operations. This is consistent with the doctrinal and organizational changes that occurred between 1961 and 1967. By 1967 the Pentomic era was over and the Army was again concentrating on a more linear style of fighting.[24] This made the placement of the FSCL close to the forward elements an acceptable way to increase the firepower placed on enemy units.

The 1977 version of FM 6-20, Fire Support in Combined Arms Operations, changed the definition of the FSCL to give the ground commander more room and used it to separate close air support (CAS) from air interdiction (AI). It defined the FSCL as:

> ...a line beyond which all targets may be
> attacked by any weapon system (including air
> and nuclear weapons) without endangering
> friendly troops or requiring additional
> coordination with the establishing
> headquarters.[25]

Significantly, this new definition did not require the ground commander to place the FSCL close to the friendly troops. Additionally, FM 6-20 designated all air missions used to support ground commanders short of the FSCL as CAS and missions used beyond the FSCL as AI.[26] Since the air component commander controlled the execution of AI he effectively controlled everything beyond the FSCL.[27]

FM 6-20 recognized the difficulty of using a geographical control measure to define the functionally-based CAS and AI missions. It dealt with this difficulty by saying that the FSCL delineated AI and CAS "for planning purposes,"

8

stating that in practice there would be some overlap between CAS and AI, and differentiating between CAS within five kilometers of the front that required a FAC to ensure troop safety and more distant CAS which did not require a FAC.[28]

The current definition of the FSCL is found in JCS Pub 1-02 Department of Defense Dictionary of Military and Associated Terms. This publication defines the FSCL as:

> ....a line established by the appropriate
> ground commander to ensure coordination of
> fire not under his control but which may
> affect current tactical operations. The FSCL
> is used to coordinate fires of air, ground,
> and sea weapon systems using any type of
> ammunition against any type of target. The
> FSCL should follow well-defined terrain
> features. The establishment of the FSCL must
> be coordinated with the appropriate tactical
> air commander and other supporting elements.
> Supporting elements may attack targets
> forward of the FSCL without prior
> coordination with the ground force commander,
> provided the attack will not produce adverse
> effects on or to the rear of the line.
> Attacks against targets behind this line must
> be coordinated with the appropriate ground
> force commander.[29]

This definition also applies to North Atlantic Treaty Organization (NATO) allies.

While this definition indicates a concern for air to ground fratricide short of the FSCL it does.not allow for ground to air fratricide beyond the FSCL.[30] The definition does not state or imply that ground commanders must coordinate before engaging targets beyond the FSCL. In essence, this definition ignores the need for unity of effort throughout the battlefield and the impact of ground systems that can range beyond the FSCL.

9

U.S. Army fire support manuals try to clarify this
definition for ground fire support agencies. FM 6-20-30 Fire
Support for Corps and Division Operations, states:

> The attack of targets beyond the FSCL by Army
> assets should be coordinated with supporting
> tactical air. This coordination is defined
> as informing and/or consulting with the
> supporting tactical air component. However,
> the inability to effect this coordination
> does not preclude the attack of targets
> beyond the FSCL.[31]

Additionally, FM 6-20-30 Fire Support for Corps and
Division Operations, establishes three conditions that should
be met before an FSCL is established: 1) the area beyond the
FSCL does not need selective targeting to shape the deep
operations fight, 2) the expeditious attack of targets beyond
the FSCL will support the operations of the corps, the
attacking unit, or the higher headquarters of the attacking
unit, 3) the corps is willing to accept the possible
duplication of effort resulting from dual targeting beyond
the FSCL.[32]

FSCL Challenges

Changes in doctrine and technology may have invalidated
the current FSCL definition. The current definition was
satisfactory as long as the ground commander was unable to
engage targets beyond the FSCL and was uninterested in the
details of how the battle beyond the FSCL was fought.
However, the importance of deep operations, the development
of service doctrines to conduct deep operations, and the
fielding of ground systems that could range beyond the FSCL
challenged the continuing validity of this FSCM. Operation
Desert Storm highlighted these problems. During this
operation the JFC redefined the FSCL to make it meet his

10

needs. Additionally, NATO and CFC developed different systems for controlling deep operations and delineating area responsibilities to ground and air commanders.

Toward Deep Operations Doctrine

The Army's "AirLand Battle" doctrine was a direct outgrowth of the Army's desire to extend the battlefield in depth to defeat multi-echeloned Soviet formations.[33] During the late 1970s General Donn A. Starry, the commander of the Army's Training and Doctrine Command (TRADOC), became convinced that the current "Active Defense" doctrine would be ineffective against a multi-echeloned enemy.[34]

Starry's TRADOC concept writers developed the deep attack as a way to defeat Soviet follow-on echelons. Their idea was to use lethal and non-lethal means throughout the depth of the battlefield to delay, disrupt, and limit follow-on echelons. This would allow the forces on the forward line own troops (FLOT) to fight one echelon at a time, gain numerical superiority at the point of contact, and wrest the initiative from the enemy.[35]

To be effective deep attack had to be closely coordinated with the close-in and rear battles. In this way scarce resources were not wasted on targets whose destruction would have little impact on the desired end result. Such coordination required timely anticipation of enemy vulnerabilities and the ability to strike at these vunerabilities during limited windows of opportunity.[36]

The TRADOC concept developers realized the deep attack concept could not succeed without responsive Air Force support. Only the Air Force had the attack, acquisition, and command and control systems to significantly affect second

11

echelon forces.   Although the Army had, and was developing, systems to complement these capabilities, it would have to depend on the Air Force for the bulk of this effort.[37]

Historically the Air Force's three tactical missions have been air superiority, interdiction, and close air support.[38] The interdiction mission was the best suited for deep attacks against second echelon forces. The Air Force defines air interdiction (AI) as:

> ...air operations conducted to delay,
> disrupt, divert, or destroy an enemy's
> military potential before it can be brought
> to bear effectively against friendly
> forces... and at such a distance from
> friendly forces that detailed integration....
> is normally not required.[39]

According to this definition, the Air Force plans and executes AI without detailed coordination with ground forces. TRADOC concept developers believed this lack of coordination prevented AI from setting the conditions for success in the close-in fight.[40] This resulted in unsynchronized deep, close and rear operations and allowed the enemy to gain overwhelming numerical superiority at the FLOT.[41]

In 1980 TRADOC and the Air Force Tactical Air Command (TAC) signed a memorandum of agreement to provide battlefield air interdiction (BAI) to Army forces.[42] According to the 1984 version of Air Force Manual 1-1, __Basic Aerospace Doctrine of the United States Air Force__:

> Air interdiction attacks against targets
> which are in a position to have a near term
> effect on friendly land forces are referred
> to as battlefield air interdiction....
> Battlefield air interdiction requires joint
> coordination at the component level during
> planning, but once planned battlefield air
> interdiction is controlled by the air

commander as an integral part of a total air interdiction campaign.[43]

This definition was a compromise which gave the ground commander input into planning a portion of the interdiction effort while keeping the entire operation under air component control during execution. The amount of BAI the ground commanders would receive depended on the theater commander's apportionment decision and a negotiated agreement between the land component commander (LCC) and the JFACC on how much of the total interdiction effort would be used as BAI.[44] The 1992 version of Air Force Manual 1-1 eliminated BAI although both NATO and CFC still use BAI as a subset of the AI force application mission.[45]

The current joint system for conducting deep operations had its genesis in a U.S. Army Training and Doctrine Command (TRADOC)/U.S. Air Force Tactical Air Command (TAC) Pamphlet entitled General Operating Procedures for Joint Attack of the Second Echelon. TRADOC PAM 525-45 provided specific procedures for attacking enemy follow-on forces in any theater. The primary objective was to ensure unity of effort by the land and air components during the attack of enemy follow-on forces.[46] Other objectives were to increase mutual support, improve targeting, reduce duplication of effort, preclude adverse effects on friendy forces, and ensure the effectiveness of operations during periods of degraded communications.[47]

TRADOC PAM 525-45 provided detailed procedures for integrating the efforts of the land and air component commanders in an overall interdiction operation. It defines interdiction responsibilities for the air component

13

commander's Tactical Air Control Center (TACC), the
Battlefield Coordination Element (BCE) that represents the
LCC at the TACC, the Air Support Operations Center (ASOC)
that represents the TACC at the corps, and the Tactical Air
Control Parties (TACPs) at each Army echelon from battlalion
to corps. Additionally, it describes how BAI is integrated
into the air tasking order (ATO) process.[48]

However, since TRADOC PAM 525-45/TACP 50-29 was a
cooperative effort between the Army and the Air Force, it
fails to answer several questions about the actual conduct of
the interdiction operation. One of the most important of
these is whether ground commanders are required to coordinate
with the JFACC before engaging targets beyond the FSCL.[49]

Air Force Doctrine

Current Air Force doctrine recognizes three force
application missions; strategic attack, AI, and CAS.[50] Of
these, AI and CAS are the most important to the ground
commander. BAI is no longer a subset of AI and CAS is
described as "....the least efficient application of
aerospace forces."[51]

The Air Force had several possible reasons for
eliminating BAI. The first is that with the demise of the
Soviet Union the Army no longer faced an echeloned threat
and, as a result, no longer needed BAI.[52] The second is
that since air is usually more effective when it is under
centralized control, all interdiction assets should be part
of a centralized air interdiction campaign.[53] A third
reason is that the Air Force believes CAS is adequate to meet
all immediate ground force requirements.[54] Air Force
doctrine currently defines CAS as:

14

> Air action against hostile targets which are
> in close proximity to friendly forces and
> which require the detailed integration of
> each air mission with the fire and movement
> of these forces.[55]

Left unclear is the form this detailed integration will take.
If detailed integration is taken to mean direct control from
a FAC, CAS can only rarely be used to support a ground
commander's deep operation. If control by a FAC is not
required, ground commanders have more freedom to use their
allocated CAS sorties to support deep operations.

Since CAS is employed closer to friendly ground forces
than other air missions, fratricide is a real concern. While
current Air Force doctrine does not indicate whether direct
control is required it does state that CAS should be planned
and controlled to reduce the risk of friendly casualties.[56]

One of the most interesting sections of Air Force Manual
1-1, Basic Aerospace Doctrine of the United States Air Force,
is the section on "airmindedness." Although not presented as
doctrine, this section recognizes unity of command as
"...important for all forces, but...critical to aerospace
forces."[57] The manual descibes two reasons for this.
First, aerospace power is the product of multiple
capabilities and centralized control is the key to fusing
these capabilities. Second, the momentary misapplication of
airpower is more likely to have strategic consequences than
is the case with surface forces.[58]

Air Force doctrine recognizes that interdiction and
surface operations should be complementary. However, the
doctrine emphasizes the need for ground forces to tailor
their operations to support interdiction rather than

15

tailoring interdiction to support ground forces. The manual
also supports conducting interdiction at the maximum possible
depth to reduce fratricide, maximize flexibility during
execution, and reduce the coordination required between
components.[59]

According to Dr. Richard Hallion, a one-time visiting
Professor of Military History at the U.S. Army Military
History Institute and currently the official historian of the
United States Air Force, close interdiction has historically
been more effective than deep interdiction. There are
several reasons for this. First, deep interdiction is far
more difficult to synchronize with ground forces than close
interdiction. Second, the enemy can usually overcome the
effects of deep interdiction by finding different ways to
supply his forces. Third, political constraints may prevent
deep interdiction.[60] For these reasons close interdiction
may be a major factor in future war although it is not
emphasized in current Air Force doctrine.

Army Doctrine

Even with the demise of the Soviet Union, U.S. Army
doctrine still recognizes the validity of deep operations.
According to the 1992 final draft version of FM 100-5
Operations, deep operations are key to establishing a faster
tempo than the enemy and stripping him of the initiative.
Commanders achieve synergy by simultaneously applying combat
power thoughout the depth of the battlefield. This synergy
allows the force to achieve its objectives with minimal cost.
However, to be fully effective deep, close, and rear
operations must be complementary and they must must preserve

this synchronization in spite of rapid movement, battle losses, and changes in the main effort.[61]

Army doctrine also highlights the importance of unity of command. However, unlike Air Force doctrine, Army doctrine recognizes that unity of command is not always possible because all forces may not be under the same command structure. When this is the case there must be unity of effort. Unity of effort means that all forces must be united in intent and purpose if not command.[62]

FM 100-15, Corps Operations and FM 71-100, Division Operations each provide a detailed discussion of the purpose and conduct of deep operations. According to these manuals, deep operations are directed against enemy forces not engaged in close operations but capable of influencing future close operations. In essence deep operations shape the battlefield to create the conditions for the success of future close operations.[63]

Since deep operations complement close operations, they must be tightly synchronized with close operations to achieve their desired effect.[64] Additionally, the relative scarcity of deep operations assets and the large number of potential deep operations targets means that each system must be used to its best effect and target duplication must be avoided.[65]

For these reasons both corps and division use the decide-detect-deliver targeting methodology to ensure that the right asset is used against the right target at the right time and place.[66] By implication each echelon must achieve unity of effort over its deep operation to ensure that scarce deep operations assets are effectively used to create the

conditions for the success of subordinate units in close operations.

<div align="center"><u>Comparison of Army and Air Force Doctrine</u></div>

There are some profound implications to the different doctrinal interpretations of how to achieve unity of purpose. The Air Force believes the only way to do this is to centralize decision making and control at the highest levels of command to efficiently use air assets and to synchronize multiple aerospace capabilities.[67] The Army believes decentralization may be necessary but that when operations are decentralized unity of intent and purpose must be present.

Historically, there has often been some degree of decentralization in planning and controlling air assets. For example during the Battle of Britain, the British divided the country into several zones to facilitate quick response to German air attacks. A group headquarters planned and controlled the operations of the squadrons assigned to the zone.[68] This decentralized system was somewhat inefficient but made up for this inefficiency through quicker response.

The Air Force is probably correct when it asserts that centralized control of air assets permits the JFACC to more efficiently use these assets to accomplish the JFC's interdiction objectives. The problem occurs when speed of response or the requirement to provide close support to ground forces is more important than interdiction. In this case decentralization is required and, as Army doctrine emphasizes, unity of purpose must be maintained. By arguing that air should always be centrally controlled at the highest levels, Air Force doctrine ignores the possibility that U.S.

<div align="center">18</div>

forces may one day fight against an enemy who is strong enough to gain and retain the initiative. This lack of doctrinal flexibility, like the interwar belief that close air support was impossible and unnecessary, is a problem that may have adverse consequences in a future war.

Technological Change

Army equipment is begining to give ground commanders the ability to strike deep effectively. The Army Tactical Missile System (ATACMS) allows the corps commander to destroy soft targets at ranges in excess of 150 kilometers.[69] Future developments will extend this range and enable the system to use brilliant munitions to destroy multiple hard targets.[70] A program to extend the range of the Multiple Launch Rocket System (MLRS) from 30 kilometers to 45 kilometers is currently underway.[71] The AH-64 Apache helicopter gives the corps commander a reach of 70-150 kilometers into the opponents rear.[72] Target acquisition systems such as the Joint Surveilance Target Attack Radar System (J-STARS), the Unmanned Aerial Vehicle (UAV), and the All Source Analysis System (ASAS) will give the corps an acquisition capability to complement these attack systems.[73]

Desert Storm

Desert Storm highlighted the problems with the current doctrinal system for delineating area responsibilities to air and ground commanders. During this operation the FSCL became a de facto boundary between air and ground and ground forces were required to coordinate with the JFACC before engaging targets beyond the FSCL.[74] This coordination took between 30 minutes and two hours depending on the target and who

19

initiated the mission.[75] This ensured unity of effort beyond the FSCL by allowing the JFACC to control the entire interdiction effort and prevented ground systems from endangering friendly aircraft.[76]

During Desert Storm there was confusion over who was responsible for establishing the FSCL. Both the JFC, who was also the LCC, and the corps commanders established FSCLs.[77] For example, during the air campaign VII Corps established FSCLs and kept them close to the ground troops to facilitate air engaging targets.[78] However, during the height of the ground campaign the JFACC moved the FSCL in the VII Corps zone and kept tactical aircraft from engaging Republican Guard Forces at a critical time.[79]

Since BAI was not distributed to the ground elements, ground commanders were placed in a dilemma when deciding where to place the FSCL. If they placed the FSCL close to the FLOT they opened the area beyond it for air attack, but lost the ability to influence their deep operation. If they placed the FSCL further away, they gained control of additional area but lost the ability to strike this area with air assets.[80] In the example above, when the JFACC moved the FSCL, he prevented tactical air from striking the Republican Guard because VII Corps had no BAI sorties and AI was not used short of the FSCL. CAS could not be used because all aircraft flying short of the FSCL had to be directed by a FAC.[81]

The non-doctrinal use of the FSCL caused confusion for Army commanders and between services. Since Joint and Army doctrines permitted ground systems to attack targets beyond the FSCL, ground commanders were extremely frustrated when

20

they were required to coordinate with the JFACC before engaging targets beyond the FSCL.[82] The U.S. Marine Corps adhered to the Joint definition and attacked targets beyond the FSCL in the VII Corps zone without coordinating with the JFACC.[83]

Desert Storm showed that changes in doctrine and technology have challenged the continuing validity of the FSCL. Hard questions about the FSCL's meaning and purpose must be answered if it is to remain a useful concept. Addtionally, the FSCL's role within the context of the entire air-ground relationship must be clearly defined.

NATO/CFC Systems

There are significant air-ground interface differences between NATO and U.S. Joint doctrines. These include a control measure to separate the deep operations areas of the corps and army group commanders and the use of offensive air support (OAS), which includes BAI, CAS, and tactical air reconnaissance, to support the corps commanders.[84]

The Reconnaissance Interdiction Planning Line (RIPL) is used to delineate area responsibilities to the army group and corps commanders. In essence the RIPL is the limit of the corps commander's planning responsibility. Short of the RIPL corps commanders are responsible for nominating targets that have direct bearing on land operations.[85]

Although the NATO and joint definitions of the FSCL are exactly the same, the FSCL is a permissive control measure in NATO. By giving the corps commander planning responsibility to the RIPL the need to coordinate surface fires with air between the FSCL and RIPL is greatly reduced. Although

21

positive control of air missions or ground fires beyond the FSCL is desirable, it is not required.[86]

The grouping of BAI, CAS, and tactical air reconnaissance as OAS gives the corps commander some capability to use air to shape his deep operation. Unlike the U.S. system, which regarded BAI as a subset of AI, the use of OAS allows the corps commander to use his allocated air sorties in the way he feels will give him the best payoff.[87] Normally this is by using them as BAI.[88]

Central Army Group (CENTAG) practice differs from NATO doctrine. In CENTAG, AI and BAI are integrated into one interdiction effort. Based on the corps commanders' BAI nominations and CENTAG priorities, the CENTAG commander allocates a deep operations mission to a corps along with the BAI assets to accomplish this mission. The corps then decides exactly how the BAI mission will be implemented.[89] This provides unity of effort for the CENTAG interdiction effort while allowing the corps commander to integrate BAI into the corps plan.

The system used by CFC is similar to the NATO model. The only real differences are that the Deep Battle Synchronization Line (DBSL) is used in place of the RIPL, the JFACC has coordinating responsibility for the area between the FSCL and the DBSL, a portion of the allocated BAI is placed on ground alert, and ground systems such as ATACMS are included as needed in the integrated tasking order (ITO) to facilitate the JFC's theater interdiction effort.[90]

Air-Ground Interface Problems

Structural problems make it difficult to establish an effective air-ground interface at the operational level.

These problems include the lack of a joint force fire coordinator (JFFC) at echelons above corps (EAC), the lack of a fire coordination element (FCE) with these headquarters, the lack of an air liaison with EAC ground headquarters, and confusion over the role of the Joint Targeting Control Board.[91] These problems limit the ability of EAC ground headquarters to prioritize requirements and influence target selection for the JFC's interdiction operation.[92] As a result the TACC effectively controls the targeting, sequencing, and execution of operational fires with limited ground input.[93] Thus, although doctrine requires air-ground cooperation on a variety of issues, limited ground planning capabilities make the JFACC the key player in these decisions.[94]

SECTION 3. THEORY

Theory offers insights to use when analyzing if the FSCL should delineate area responsibilites between air and ground commanders. This monograph uses several theories to develop criteria for answering the research question. These include Colonel John A. Warden's concept of a key force and Martin Van Creveld's beliefs about creating command systems to deal with the uncertainties of war.

In _The Air Campaign,_ Warden offers joint commanders a concept for deciding how to best use land, sea, and air forces to strike at enemy centers of gravity. This is the concept of a key force. The key force is that component the JFC uses to focus the efforts of the entire force on accomplishing the strategic objective(s). Any component can be the key force.[95]

23

Warden derives the key force concept from his belief that the JFC should use his components in the most effective way to accomplish the strategic objective(s). Components should not participate equally unless this is the most effective way to conduct the campaign. Likewise, components should not be subordinated to one another unless it makes sense in the overall context. Warden believes true jointness is using each component so it contributes the most to the JFC's plan.[96] The JFC does this by choosing a key force.

According to Warden, the JFC designs his campaign plan to ensure the success of the key force.[97] The campaign plan should use the key force to strike at enemy centers of gravity while the other components support the key force to enable it to accomplish its mission more effectively. Warden defines centers of gravity as "... point(s) where the enemy is most vulnerable and ... where attack(s) will have the best chance of being decisive."[98] He believes there can be multiple centers of gravity at both the strategic and operational levels.

The JFC considers several factors when deciding which component will be the key force. The air component should be the key force if it can most easily reach the enemy centers of gravity, time is available to let it achieve the desired effects, and political authorities give it the freedom to conduct a coherent air campaign. The ground component should be the key force if time is short, centers of gravity cannot be effectively attacked by air, or political constraints prevent air from having the desired effect. The sea component, which has its own land and air forces, is the ideal key force in a maritime environment when it can most

easily reach the enemy centers of gravity. Since sea forces
are largely self-contained and designed to operate in a
specific environment, they are the easiest to choose or
reject as the key force.[99]

The key force can shift during the conduct of a
campaign.[100] During Desert Storm the air component was
initially the key force. Air allowed the JFC to destroy
Iraqi nuclear and chemical capabilies, disrupt Iraqi command
and control, and weaken Iraqi forces to set the conditions
for the success of the ground assault to liberate Kuwait.
When the ground campaign began, the land component became the
key force with the air component in a supporting role.
Although important, the sea component was in a supporting
role throughout because operations were primarily conducted
in a land-based theater.

The key force concept is extremely important when
deciding how to delineate responsibilities to air, land, or
sea forces. Joint doctrine should be flexible enough to
support air, land, or sea components being the key force.
Additionally, it should facilitate the transition from one
key force to another. During Desert Storm, air was the key
force initially with ground becoming the key force later.
Joint doctrine should have facilitated this transition from
one key force to another. Thus the first criterion for
evaluating ways of delineating area responsibiilties should
be that it is flexible enough to support air or ground as the
key force and facilitate the transition from one key force to
another.

Martin Van Creveld's Command in War offers some unique
perspectives on the effectiveness of various command systems

used in war. To Van Creveld, a command system consists of organization, procedures, and technical means while command itself is the process that goes on within this system.[101] The procedure used to delineate area responsibilities to air and ground commanders is largely based on technical capabilities and has profound organizational implications. For these reasons, this procedure is an important facet of the JFC's command system and should be examined in light of Van Creveld's ideas.

Van Creveld sees the quest for certainty as a constant in the history of command in war. However, Van Creveld believes certainty is impossible to achieve for several reasons. These include the strong human emotions released by war, the independence of the combatants, and the active efforts of each combatant to distort the information the other combatant(s) receive.[102]

Since it is impossible to eliminate uncertainty, the best command systems operate effectively in an uncertain environment. For this reason, Van Creveld believes the role of uncertainty should be the decisive element in determining the structure of command.[103]

According to Van Creveld a command system designed to deal with uncertainty has five characteristics. First, decision thresholds are pushed down the chain of command to allow subordinate commanders to make decisions when faced with changing situations. Second, units are self-contained at fairly low levels to allow them to act effectively after making decisions. Third, regular information flow from the top down and the bottom up reduces uncertainty at lower levels and provides higher-level commanders with needed

information. Fourth, the higher level commander supplements regularly reported information at critical times and places to reduce uncertainty and accelerate his response. Fifth, an informal information network facilitates trust and supplements normal communication channels.[104]

From Van Creveld two additional criteria can be derived for evaluating methods for delineating area responsibilities between air and ground commanders. The first is that the method gives subordinate ground commanders the structure, decision thresholds, and freedom of action to act effectively without centralized control. This allows the JFC to focus on taking advantage of opportunities rather than providing immediate support to subordinate formations. The second is that the method is flexible enough to be adapted to any situation likely to be faced by U.S. forces. Flexible procedures that are designed to allow the JFC and his subordinates to respond to a variety of situations is the key to obtaining this kind of adaptability.

SECTION 4. ALTERNATIVES

There are a variety of possible methods for delineating area responsibilities to air and ground commanders. This monograph will examine three of these methods. The first is the current U.S. system first outlined in TRADOC Pam 525-45/TAC Pam 50-29, General Operating Procedures for Joint Attack of the Second Echelon (JSAK), modified during Desert Storm, and described in current Air Force doctrine. The second is the method outlined in NATO doctrine and modified by CENTAG. The third method uses two control measures to delineate responsibility between air and ground. The first

is used by the operational commander when forward boundaries are insufficient. The second is used by the tactical commander to create a permissive environment to enable air to help him shape his deep operation.

The method used to delineate area responsibilities is but one facet of a larger air-ground interface system. Ground and air commanders have different perspectives on what this system should do. To a ground commander this system should provide air support at the right time and place without unduly restricting his freedom of action or endangering his troops. Conversely, the air commander wants to maintain as much centralized control as possible over scarce air assets and wants to use these assets where they will do the most good for the JFC.

Because ground and air commanders have conflicting expectations, any method concerning one part of the interface system must address the other aspects as well. These include the Air Force's force application missions and the command and control system that ensures that air assets are employed at the right time and place to support the JFC and his subordinate ground commanders.

Method 1

The first method is the system used by U.S. forces during Desert Storm and described in current Air Force doctrine. This method uses the FSCL as a defacto boundary between ground and air commanders and requires ground commanders to coordinate with the JFACC before engaging targets beyond the FSCL. It uses AI and CAS to support ground commanders while selectively including ground systems in the AI effort. This system features ground component

targeting input but total JFACC control of AI while the ground commander plans and controls CAS.

This method uses two Air Force force application missions to support ground commanders. AI is used, primarily beyond the FSCL, to shape the battlefield in accordance with the JFC's priorities. Under this system the subordinate commanders' AI target nominations are only attacked if they support the JFC's interdiction priorities or excess sorties are available. CAS is distributed to the subordinate ground elements in accordance with the priorities of ground commanders.[105] Left unclear is which force application mission is used to strike targets short of the FSCL but beyond the ability of ground units to provide direct control.

Under this system ground systems that can range beyond the FSCL can be tasked to support the interdiction effort. Both ATACMs and attack helicopters were used this way during Desert Storm and, at times these systems were placed on the air tasking order (ATO).[106]

Method 2

The second method is described in NATO doctrine and modified in practice by CENTAG. It uses the RIPL to delineate planning responsibilities between the corps and army group commanders and uses the FSCL to create a permissive environment for air to shape the battlefield in accordance with corps and army group priorities. Air Force force application missions include AI to support the army group, BAI to support the corps deep fight, and CAS to support ground units in contact.[107]

This system creates an area of joint responsibility between the FSCL and the RIPL. Although corps has planning

responsibility between these control measures the air component usually controls the majority of the assets used to attack targets in this area. Additionally, since army group approves corps BAI target nominations and allocates BAI assets to attack these approved targets, the corps plan must mirror army group target priorities if it is to be adequately resourced.[108]

This method's use of AI and BAI allows the air component to plan and conduct a coherent interdiction operation while giving the corps some input into this effort. The army group plans AI and usually uses it beyond the RIPL.[109] BAI is based on corps target nominations and is primarily used between the FSCL and RIPL.[110] Because the army group commander approves corps BAI target nominations and allocates BAI sorties against these targets, this system allows the air component to integrate BAI targets into the army group interdiction effort.[111] T,hus this system strikes a balance between providing support to the corps while efficiently using scarce air assets to support the army group commander.

Method 3

The third method uses several control measures to give the JFC and subordinate ground commanders the flexibility to structure the battlefield to fit the situation. The JFC and his subordinate ground commanders do not have to use each control measure in every situation. These control measures are the boundary, the operational interdiction line (OIL), and the tactical interdiction line (TIL). Additionally, this method recommends several techniques to refine the Air Force's force application missions to provide responsive

30

support to ground commanders beyond their ability to provide direct control.

The first control measure is the boundary. The boundary is established by a higher level commander for his subordinate units and defines the units' area of responsibility. This use of the boundary differs from current definintions in that boundaries are used to delineate forward as well as lateral and rear limits for subordinate units.[112]

This use of the boundary will normally give the JFACC total responsibility for the area controlled by the JFC. This means ground forces must coordinate with the JFACC before engaging targets in the area the JFACC controls. Conversely, in the absence of other control measures the JFACC must coordinate with ground commanders before engaging targets in their areas.

The second control measure is the operational interdiction line (OIL). It is established by the JFC or a sub-unified commander to enlarge the JFACC's permissive area. The JFACC is responsible for the area between the OIL and the subordinate unit's far boundary. Ground units cannot engage targets beyond the OIL without coordinating with the JFACC.

The third control measure is the tactical interdiction line (TIL). It is established by the land component commander (LCC) or a subordinate ground commander to form a permissive area for AI to be used within his area of operations. The JFACC plans and controls all fires in the area beyond the TIL and within the boundaries of the establishing unit in accordance with the priorities of the establishing unit. Thus, responsibility for the area between the TIL and the OIL or the TIL and the far boundary is shared

31

between the LCC and the JFACC. Ground units cannot engage targets in this area without coordinating with the JFACC.

To make this method work, the Air Force's force application missions must provide adequate and responsive support to ground commanders throughout the depth of their areas of of operation. AI would continue to be used primarily in the permissive areas established by the JFC and his subordinate ground commanders. CAS would continue to be used to support troops in contact. Additionally, air assets would be allocated to ground commanders to provide responsive support against targets not in close proximity to friendly troops but that are important for the ground commander to achieve his assigned objective(s).

There are several possible ways to provide this responsive support. The first is to use BAI and to place a portion of the BAI on ground alert during specific time windows to quickly respond to the requirements of the ground commanders. This method is currently used by CFC in Korea.[113] A second mathod is to redefine the CAS mission based on the ability of ground forces to provide SEAD as well as the proximity of the target to friendly troops. Under this option there would be close CAS, intermediate CAS, and deep CAS. Close CAS would be used against targets in close proximity to friendly troops and would require direct control from a FAC. Intermediate CAS would be within ground indirect fire range but not in close proximity to friendly ground troops. Ground forces would provide SEAD for these missions but direct control would not be required. This would be an ideal mission for the F/A-16.[114] Distant CAS would be beyond the ground unit's requirement to provide SEAD and,

32

like BAI, would require force packaging by the JFACC to protect the aircraft.

Like the Desert Storm model this system allows the JFC to use ground systems to support the joint interdiction effort. These systems must be integrated into the JFACC's plan and should be included on the ATO.

Allowing ground systems to be placed on the ATO does not mean that the JFACC should always control these assets. For example, the JFC could allocate the JFACC a certain number of ATACMS missiles to support the JFACC during an ATO cycle or for a phase of the campaign. The JFC should consider several factors when deciding to use ground systems to support the interdiction effort. These include facilitating the success of the key force, meeting the needs of the ground and air commanders, protecting ground and air systems that may be critical to the success of a later phase of the campaign, and allowing joint commanders to attack critical targets when weather restricts the use of airframes.

SECTION 5. ANALYSIS

This section analyzes each alternative using the theory-based criteria developed in Section 3. These criteria include: enabling either air or ground to be the key force and facilitating the transition from one key force to another; providing ground units the structure, decision thresholds, and freedom to act without centralized control; and giving the joint force the flexibility to adapt to the wide variety of conditions under which U.S. forces could be committed.

Method 1

The Desert Storm model supports air being the key force. It facilitates unity of effort for the key force in a variety of ways: giving the JFACC the responsibility to plan and control the entire interdiction effort; giving the JFACC total control beyond the FSCL; and giving only one force application mission, CAS, to support the ground commander. This method gives the JFACC tremendous influence over the placement of the FSCL by forcing the ground commander to choose between a close-in FSCL or limited air interdiction support.

This method makes it difficult for ground to be the key force. It does this by making it impossible for the ground commander to establish unity of effort over his deep operation, failing to allocate air assets to ground commanders beyond those used in close proximity to friendly troops, and limiting ground commander input into how targets beyond the FSCL are engaged.

Transitioning from one key force to another is extremely difficult under this method. The only ways to facilitate a transition from one key force to another are to move the FSCL and/or to allocate additional CAS or AI. This method does not provide for increasing ground input into targeting beyond the FSCL or giving ground commanders air assets to use for engaging enemy forces short of the FSCL but not in close proximity to friendly troops.

Because this method depends on a highly centralized interdiction effort it does not give subordinate ground commanders the structure, decision thesholds, and freedom of action to succeed on their own. Since the success of the

joint force is dependent on the success of the interdiction effort, this system could fail against an enemy who is able to cause the interdiction effort to fail. Since ground units have not been structured to succeed on their own, the failure of the interdiction effort would force the JFC to react to the failures of subordinate ground units at the expense of the overall campaign design.

This method is designed to facilitate the use of air to defeat an echeloned enemy on a linear battlefield. It risks failure in situations when time is short or space is limited. One obvious response to this method is to position large forces close to friendly ground forces prior to hostilities. Many say this was the Soviet response to AirLand Battle doctrine.[115] The Desert Storm model could break down under this kind of pressure because it does not facilitate shifting control of significant amounts of air to support U.S. ground troops in the close fight.

It is difficult to adapt the Desert Storm model to a non-linear environment. In a non-linear fight using a line to divide the battlefield between the ground commander and the JFACC is impractical and positive control becomes more important. By providing only one control measure, the FSCL, and limiting the support available to the ground commander this method does not provide the flexibility and quick response needed in a non-linear environment.

Method 2

The NATO method, as modified by CENTAG, also supports air being the key force. It does this by giving the air component commander (ACC) total control beyond the RIPL and making the ACC responsible for all aspect of the interdiction

effort. Under this method the ACC recommends a prioritized list of corps BAI nominations to the army group commander who approves the targets and allocates BAI assets to attack these targets.

This method gives subordinate ground commanders more influence on the interdiction operation than ground commanders had during Desert Storm. It does this by giving the corps commander primary targeting responsibility between the FSCL and the RIPL and allocating BAI sorties to use against corps BAI nominations.

These measures are not sufficient to facilitate the land component being the key force. The rigid use of the FSCL/RIPL geometry and the effective control the ACC has over the interdiction effort makes it difficult for the ground forces to be the key force initially or become the key force later.

Similarly, the CENTAG system does not give subordinate ground commanders the assets, decision thresholds, or freedom of action to succeed if the CENTAG interdiction operation fails. This system centralizes interdiction targeting and ties the allocation or air assets to support ground forces to these decisions. This limits the subordinate ground commander's freedom of action by making him dependent on CENTAG for BAI assets and forcing hime to use these assets against specified targets.

The CENTAG method limits subordinate unit flexibility in favor of a centralized interdiction effort. This could lead to failure against a competent opponent who is able to neutralize the interdiction effort. Since ground commanders depend on the CENTAG interdiction effort to set the

conditions for their success, they would be highly vulnerable should this effort fail. This could lead to CENTAG being forced to react to subordinate unit failures rather than focusing on taking advantage of opportunities.

Like the Desrt Storm model, the CENTAG system is not adaptable to changing circumstances. The rigid use of a RIPL and an FSCL limits the ability of the CENTAG commander to adapt when the enemy deploys the bulk of his force near U.S. ground troops. For this reason some NATO officers have suggested using the FSCL to delineate air and ground responsibiities and tailoring asset allocations to the threat faced.[116]

On a non-linear battlefield the CENTAG system has the same vulnerabilities as the Desert Storm model. These include limitations caused by the control measures used to divide the battlefield to facilitate a centralized interdiction effort and an unwillingness to allocate sufficient assets to the ground commanders to let them succeed without higher headquarters intervention.

Method 3

Method 3 is flexible enough to allow either ground or air to be the key force. To facilitate air being the key force the JFC would place the OIL close to the ground forces and apportion more AI than BAI/CAS. The result would be similar to the Desert Storm model without the confusion over who establishes the FSCL or whether ground should coordinate before engaging targets beyond the FSCL. If ground were the key force, the JFC could establish boundaries and allocate more BAI/CAS to the ground units. Subordinate ground commanders could use TILs to enable the JFACC to engage

37

targets in areas they did not need to control or were unable to control. The JFACC would do this using AI in accordance with the ground commander's priorities.

This method facilitates the transition from one key force to another by using easily understood control measures and by clearly delineating who establishes each control measure. Current joint doctrine is largely the result of compromises designed to please each service.[117] This makes command and control transitions difficult by confusing component responsibilities. By clearly defining the purpose, establishing authority, and coordination responsibilities of each coordinating measure this method facilitates a quicker and cleaner transition.

This method gives the JFC and his subordinate ground commanders a wider range of options for delineating air and ground responsibilities. This allows the JFC to give subordinate commanders the structure, decision thresholds, and freedom of action to succeed without higher headquarters help. It also allows the JFC to centrally control operations when he feels that it is necessary. For example, if the JFC felt the ground commander of a supporting effort needed maximum flexiblity he could simply establish boundaries and give the subordinate sufficient CAS to allow him to accomplish his mission. Conversly, the JFC might use boundaries, an OIL, and a centrally controlled AI effort to set the conditions needed for the main effort to succeed. Additionally, in each case the subordinate ground commander could use TILs to establish permissive areas for the JFACC to employ AI in their areas in accordance with their priorities.

SECTION 6. CONCLUSION

This monograph concludes that obtaining unity of effort necessitates giving a ground or air commander responsibility over each area of the battlefield. The accuracy, lethality, and relative scarcity of modern munitions makes using the right asset against the right target at the right time more i portant than opening up areas of the battlefield for engagement by all systems. This is a fundamental change to the World War II paradigm that led to the establishment of current fire support coordinating measures such as the FSCL. For this reason the current definition of the FSCL must change if the measure is to remain useful.

Since the new paradigm makes it necessary to establish area responsibilities over every part of the battlefield, the question becomes how these area responsibilities should be established. Theory gives ideas to consider when doing this. First, the method should facilitate the success of the key force as it strikes the enemy center of gravity and ease the transition from one key force to another during the course of a campaign. Second, the method should structure ground forces to accomplish their missions without higher headquarters intervention. Third, the method should be adaptable to the wide variety of situations into which U.S. forces could be committed. Method 3, which provides a flexible system for delineating area responsibilities and aligns Air Force force applications with this system, meets these theoretical requirements.

The method used to delineate area responsibilities to air and ground cannot be seen as separate from the entire air-ground interface system. The method for delineating area

39

responsibilities should be in harmony with the rest of the system or it would not be meaningful.

The method used to establish area responsibilities should allow either the air or land component to be the key force. If air is the key force, the system should provide centralized control over a theater interdiction campaign with ground forces in a supporting role. This means air should have a large permissive area in which to operate and control over ground systems that could facilitate the interdiction effort. If ground is the key force, the ground commander should have the assets to conduct simultaneous attacks throughout the depth of the area of operations. If a transition from one key force to another is needed the system should be flexible enough to facilitate the switch.

Ground forces, like air forces, require unity of effort to succeed. This means that the ground commander should have the assets he needs to accomplish his mission without higher headquarters intervention. These include air assets responsive to the ground commander to allow him to attack fleeting targets that are not in close proximity to friendly forces but essential to the success of his deep operation.

Any method for delineating area responsibilities must be adaptable to the variety of situations likely to be faced by U.S. forces. The Desert Storm, CENTAG, and Korean methods are each examples of such adaptations. Each is different and each was appropriate for the situation faced by the joint commander. Joint doctrine should facilitate making these adaptations by giving the joint commander a variety of control measures he can use to shape his theater to fit the situation. The problem during Desert Storm wasn't the use of

40

the FSCL; it was a doctrine that was unresponsive to the situation. Because the doctrine was inadequate, the JFC needed to modify it to make it fit his situation. This caused problems for ground commanders who were forced to do something that went against their doctrine and training. An adaptable system, such as the one recommended here, would keep this from happening in the future.

An adaptable system has another advantage. In an era of declining budgets and shrinking force structure, competition for resources often outweighs operational considerations when the services are deciding how to use their assets. A more adaptable system will force the service to interact in a variety of ways in an era when there is a great danger of individual services becoming parochial to obtain a greater share of a limited defense budget. This could help prevent problems of the sort that occurred during the interwar years when the Army Air Corps devoted such a large percentage of its resources to strategic attack that it was unprepared to provide close support to the ground forces.

The system used to delineate area responsibilities must recognize no portion of the battlefield is the exclusive province of one component. Each service has legitimate requirements that must be met in another component's area. For example the JFACC may need to destroy a critical air defense facility in the LCC's area or the LCC may need to delay a critical counterattack formation in the JFACC's area. Intelligence requirements know no boundaries. The intent for establishing area responsibilities is to ensure the unity of command/effort that Army and Air Force doctrines consider so critical. It is not to close any portion of the battlefield

to another component or to keep a component from meeting its requirements.

ENDNOTES

1. Joint Chiefs of Staff, <u>Publication 1-02, Department of Defense Dictionary of Military and Associated Terms</u> (Washington, DC: Joint Chiefs of Staff, 1989): 144. This JCS publication stipulates that supporting elements may fire beyond the FSCL using any type of fire against surface targets. The intent is clearly to facilitate the engagement of targets. The definition also specifies that the effects of these fires must not be felt short of or on the line. Additionally, it requires supporting agencies to coordinate with the appropriate ground commander before firing short of the FSCL. The intent here is clearly to safeguard friendly troops. The Army definition is identical to that in JCS Pub 1-02. U.S. Army, <u>Field Manual 101-5-1, Operational Terms and Symbols</u> (Washington, DC: Department of the Army, 1985): 1-32.

2. David H. Zook, "The Fire Support Coordination Line: Is It Time to Reconsider Our Doctrine?" (MMAS Thesis, U.S. Army Command and General Staff College, 1992), 114.

3. William G. Welch, "Notes from the BCE: Obsevations on Joint Combat Operations at Echelons Above Corps," <u>Field Artillery</u> (June 1992): 21-22.

4. Zook, 117.

5. Ibid., 28.

6. Brereton Greenhous, "Evolution of a Close Ground-Support Role for Aircraft in World War I," <u>Military Affairs</u> Vol XXXIX No 1 (February 1975): 22-28. This article provides a fascinating glimpse at the development of close air support during World War I. These early aircraft were fragile and unable to communicate with the troops on the ground. For this reason the details of how the aircraft would support the ground troops were either based on wide physical separation or extremely detailed planning. In spite of these limitations the primitive World War I aircraft had a tremendous psychological effect on the enemy troops.

7. Ibid., 27.

8. Michael D. Pearlman, "Close Air Support in World War II: The Roots of the Tragedy in Operation Cobra," <u>Combined Arms in Battle Since 1939</u>, edited by Roger Spiller, (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1992), 147-148.

9. Ibid., 147-148.

10. Ibid., 148.

11. Ibid., 148.

12. War Department, _Field Manual 6-20, Field Artillery Tactics and Technique_, (Washington, DC: U.S. Government Printing Office, 1940), 42.

13. Jonathan M. House, _Towards Combined Arms Warfare: A Survey of Twentieth Century Tactics, Doctrine, and Organization_, (Fort Leavenworth, KS: US Army Command and General Staff College, 1984), 77.

14. Charles R. Schrader, _Amicicide: The Problem of Friendly Fire in Modern War_ (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1982), 32-33, 66. These sections describe the growing pains experienced by both ground and air forces in North Africa when using close air support. In North Africa Army commanders largely misused the close air support they received and often fired at friendly aircraft. In fact at the Battle of Kasserine Pass two critical air support missions were cancelled because of the intensity of the anti-aircraft fire from friendly troops. The situation wasn't better for ground troops. On 24 November 1942 the 701st Tank Destroyer Battalion was attacked by P-38s and had "practically all its vehicles...temporarily put out of action."

15. Omar N. Bradley, "Letter to Hap Arnold 25 Sept 1944," _Bradley Papers_, USAMHI, Vol III. This reference was quoted in Russell F. Weigley, _Eisenhower's Lieutenants: The Campaign of France and Germany 1944-1945_, (Bloomington: Indiana University Press, 1981), 166.

16. Casualty figures for Cobra obtained from Pearlman, 153. The information about the aircraft lost in Sicily comes from Carlo D'Este, _Bitter Victory: The Battle for Sicily 1943_, (New York: E.P. Dutton, 1988), 308. Although it was naval anti-aircraft fire that downed these aircraft this incident illustrates the problems with air-ground cooperation. The ships that attacked the aircraft were part of an amphibious task force supporting the Sicily invasion. There were numerous other incidents during the war when friendly anti-aircraft fire shot down friendly aircraft. The attack on the transports carrying the 504th Parachute Infantry was not the only ground-air fratricide of the Sicilian Campaign. Throughout this campaign green U.S. troops continuously engaged friendly aircraft. Schrader, 70.

17. U.S. Army, _Field Manual 6-20, Field Artillery Tactics and Techniques_, (Washington, DC: Department of the Army, 1948), 95-97.

18. Ibid., 95-97.

19. Ibid., 98.

20. U.S. Army, _Field Manual 6-20-1, Field Artillery Tactics_, (Washington, DC: Department of the Army, 1961), 30-31.

21. Andrew J. Bacevich, The Pentomic Era: The U.S. Army Between Korea and Vietnam, (Washington, DC: National Defense University Press, 1986), 68-69.

22. U.S. Army, Field Manual 6-20-1, Field Artillery Tactics (Washington, DC: Department of the Army, 1965), 23.

23. U.S. Army, Field Manual 6-20-1, Field Artillery Tactics, (Washington, DC: Department of the Army, 1965; with Change 1, 1967), 23-24.

24. For a discussion of the flexible response concept and the Reorganization Objective Army Division which supported it see House, 158-160.

25. U.S. Army, Field Manual 6-20, Fire Support in Combined Arms Operations (Washington, DC: Department of the Army, 1977), 3-15.

26. Ibid., D-4.

27. Ibid., D-4.

28. Ibid., D-4 to D-5.

29. Joint Chiefs of Staff, Publication 1-02, Dictionary of Military and Associated Terms (Washington, DC: Joint Chiefs of Staff, 1989), 144.

30. David H. Zook, "The Fire Support Coordination Line: Is It Time to Reconsider Our Doctrine?" (MMAS Thesis, U.S. Army Command and General Staff College, 1992), 12.

31. U.S. Army, Field Manual 6-20-30, Fire Support for Corps and Division Operations, F-3

32. Ibid., F-3.

33. John L. Romjue, From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982 (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 1984), 45-50.

34. Ibid., 23.

35. Ibid., 48.

36. Ibid., 46.

37. Ibid., 62.

38. U.S. Air Force, Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force (Washington,DC: Department of the Air Force, 1992), 6-7. This section gives the latest in Air Force missions.   It divides these into aerospace control, force

application, force enhancement, and force support. Air superiority, air interdiction, and close air support have traditionally been the ways tactical air has been used in the force application role. Air superiority equates to aerospace control while air interdiction and close air support are force application missions.

39. U.S. Air Force, Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force (Washington, DC: Department of the Air Force, 1984), 3-3.

40. Romjue, 62-63.

41. Romjue, 61-63.

42. Ibid., 62-63.

43. U.S. Air Force, Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, (Washington, DC: Department of the Air Force, 1984), 3-4.

44. U.S. Army Training and Doctrine Command (TRADOC), Pamphlet 525-45, General Operating Procedures for Joint Attack of the Second Echelon (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 1984), 2-8.

45. U.S. Air Force, Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, (Washington, DC: Department of the Air Force, 1992), 6-7.

46. Ibid., 1-1.

47. Ibid., 1-4.

48. Ibid., 2-1 to 5-13. Chapter 2 gives command responsibiities of the JFC and component commanders. Chapter 3 describes the linkage between the TACC and the BCE. Chapter 4 discusses Air Force organizations that are linked to Army units from battalion to corps. Chapter 5 describes the ATO process and how second echelon targets are integrated into the joint planning effort.

49. Ibid., 2-2, 2-3, and 3-7. The FSCL is mentioned three times in TRADOC 525-45. The first time the placement of the FSCL is described as an item the component commanders exchange information about. The second time the LCC is told to consult with the Air Component Commander on the location of the FSCL. The third time is when the BCE plans element is told to inform the TACC of the FSCL location. Nothing is said about whether ground units can engage targets across the FSCL without coordination or about who specifically is responsible for the establishment of the FSCL when the JFC is dual hatted as the LCC.

50. U.S. Air Force, <u>Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force</u> Vol 1 (Washington, DC: Department of the Air Force, 1992), 11.

51. Ibid., 12-13.

52. John A. Warden, interview by Robert Soucy, Fort Leavenworth, KS, December 1992.

53. U.S. Air Force, <u>Air Force Manual 1-1</u> (1992), 12. According to this Air Force Doctrine "...the air component commander should control all forces performing interdiction and integrate interdiction with surface force operations to achieve the theater commander's objectives. There is tremendous tension between the two parts of this statement. At times the best way to achieve the theater commander's objectives may be to provide responsive interdiction support to the tactical commanders. This may not be achievable at the theater level.

54. Joint Proposal for FSCL. This proposal was briefed to AMSP at TACC during the East Coast trip. This proposal redefines as CAS all air support provided to the LCC to support the operations of ground units short of the FSCL. Beyond the FSCL all tactical air is AI and is integrated into the theater interdiction effort.

55. U.S. Air Force, <u>Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force</u> Vol II (Washington, DC: Department of the Air Force, 1992), 276.

56. U.S. Air Force, <u>Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force</u> Vol I, 13.

57. Ibid., 15-16.

58. Ibid., 16.

59. Ibid., 12.

60. Dr. Richard Hallion, "Battlefield Air Support: A Retrospective Assessment," <u>Airpower Journal</u> Vol IV, No 1. (Spring 1990): 14-15.

61. U.S. Army, <u>Field Manual 100-5, Operations (Preliminary Draft)</u> (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 1992), 9-13 to 9-14.

62. U.S. Army, <u>Field Manual 100-5, Operations (Final Draft)</u> (Washington, DC: Department of the Army, 1993), 2-9.

63. U.S. Army, <u>Field Manual 100-15, Corps Operations</u>, (Washington, DC: Department of the Army, 1989), 3-0 to 3-1 and U.S. Army, <u>Field Manual 71-100, Division Operations</u>, (Washington, DC: Department of the Army, 1990), 1-5 to 1-7.

64. U.S. Army, Field Manual 100-15, Corps Operations, 3-0.

65. Ibid., 3-2.

66. U.S. Army, Field Manual 100-15, Corps Operations, 3-2 and U.S. Army, Field Manual 71-100, Division Operations, 1-7.

67. U.S. Air Force, Air Force Manual 1-1 (1992), 16.

68. Richard Hough and Denis Richards, The Battle of Britain: The Greatest Air Battle of World War II (London, W. W. Norton and Co., 1989), 111-118.

69. U.S. Army Field Artillery Center, Program and Project Summary Sheets (Fort Sill, OK: Directorate of Combat Developments, 1992), 46-1.

70. Ibid., 44-2.

71. Ibid., 49-2.

72. Crosbie E. Saint, "Central Battlefield 2000: The Combat Helicopter," Army Aviation 39 (January 31, 1991): 4.

73. U.S. Army Artillery Center, Program and Project Summary Sheets, 23-28.

74. Zook, 3-4.

75. Ibid., 117.

76. Ibid., 151-154.

77. Ibid., 3-4 and 112-120.

78. Ibid., 112-115.

79. Stanley F. Cherrie, VII Corps G-3, interview by David H. Zook, Leavenworth, Kansas, 13 April 1992.

80. VII Corps Fires AAR, 2 as quoted in Zook, 115.

81. Stanley F. Cherrie, VII Corps G-3, interview by David H. Zook, Leavenworth, Kansas, 13 April 1992.

82. Zook, 5-7.

83. Desert Storm Special Study Project, Final Report, Volume III Operational, (Fort Leavenworth, KS: Combined Arms Center, 1991), II-3-9.

84. James P. Kahan, "Air Support in CENTAG Deep Operations," Military Review 69 (August 1989): 65-73.

85. Ibid., 68.

86. Ibid., 65-67.

87. Ibid., 67.

88. Ibid., 68.

89. Ibid., 70.

90. RisCassi, Robert W. "The Korean Theater - One of a Kind" interview by Patrecia Hollis, Field Artillery (February 1993): 9-10.

91. Fred F. Marty, "State of the Branch 1992," Field Artillery (December 1992): 1. This article outlines the requirements for a joint force fire support coordinator and a fire coordination element to support the JFC and ground EAC.

92. William J. Rice, "Operational Fires--What's In a Name?" (School of Advanced Military Studies Monograph, U.S. Army Command and General Staff College, 1990), 41-43. This monograph describes the problem inherent in the lack of structure at the EAC level for planning operational fires. Welch, 17-19 describes the implications of these problems during Desert Storm.

93. Rice, 41-43.

94. TRADOC, PAM 525-45, 2-2 to 2-3. This section indicates the coordination requirements of the component commanders.

95. John A. Warden, The Air Campaign: Planning for Combat (Washington, DC: National Defense University, 1988), 146.

96. Ibid., 145-146.

97. Ibid., 9-11.

98. Ibid., 9.

99. Ibid., 147-151.

100. Ibid., 149.

101. Martin Van Creveld, Command in War (Cambridge, MA: Harvard University Press, 1985), 262.

102. Ibid., 264-268.

103. Ibid., 264.

104. Ibid., 270.

105. U.S. Air Force, <u>Air Force Manual 1-1</u>, (1992) 13.

106. U.S. Army, <u>Aviation in Desert Shield/Storm</u> (Fort Rucker, AL: U.S. Army Aviation Center, 1991), 41. Attack helicopters were included on the ATO during the air campaign. This caused a problem for Army Aviation units because they didn't have the ability to interface with the Air Force computer used to generate the ATO.

107. Kahan, 65-73.

108. Ibid., 70-73.

109. Ibid., 68.

110. Ibid., 68.

111. Ibid., 70-73.

112. U.S. Army, <u>Field Manual 101-5-1, Operational Terms and Symbols</u> (Washington, DC: Department of the Army, 1985), 1-12. This manual provides an expanded version of the definition in the JCS Pub 1-02. This definition allows units to employ direct fire outside their boundaries at clearly identified enemy targets as long as friendly forces are not endangered. The Army definition also describes lateral and rear boundaries. Once again, however, no provisions are made for forward boundaries.

113. Battle Command Training Program (BCTP), "Tactical Air Operations," Seminar Delivered at School of Advanced Military Studies, U.S. Army Command and General Staff College, 5 March 1993.

114. Gary L. Dikkers, "Battlefield Air Support (BAS): A Doctrinal Definition," <u>Air Land Bulletin</u> 90-4 (31 December 1990): 3-7. In this article LTC Dikkers, the commandant of the US Air Force Europe (USAFE) Air Ground Operations School, offers a way to bridge the gap between CAS and BAI. His solution is to use battlefield air support (BAS) within the capabilities of the ground force to provide SEAD but beyond the area in which direct control is required. The intermediate CAS advocated by the monograph is the same as LTC Dikker's BAS.

115. Christopher Bellamy, <u>The Future of Land Warfare</u> (New York: St. Martin's Press, 1987), 114.

116. Peter Miller, "Areas of Responsibility Beyond the FEBA - An Analysis," <u>NATO's Sixteen Nations</u> Vol 34 No 4 (August 1989): 40-48.

117. Dennis M. Drew, "Jointness: The Fundamental Problem," <u>Airpower Journal</u> Vol VI, No 2 (Summer 1992): 62.

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